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ABSTRACT

This report deals with the further validation of the Environmental Deprivation Scale (EDS) as a predictor of criminal behavior and recidivism. The EDS measures the degree of supportive environmental input through 16 items assessing occupation, organizational activities, and interpersonal relationships. The data were obtained in behavioral interviews with 128 prison releasees and validated against the Law Encounter Severity Scale, a five-part continuous criterion of criminal behavior. The EDS was found to be highly predictive of law encounters in terms of total score, clusters of items, and individual items. The results indicate the interpersonal relationships may provide the most important contribution to successful postrelease adjustment. The Maladaptive Behavior Record (MBR) and Weekly Activity Record (WAR), response counterparts of the EDS which measure an individual's behavior in response to his environment, correlate moderately with the EDS. (NTIS/RC)

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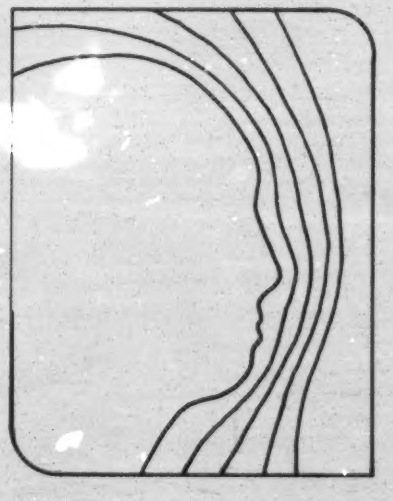

THE ENVIRONMENTAL DEPRIVATION SCALE (EDS):

THE ROLE OF ENVIRONMENTAL FACTORS IN THE ANALYSIS AND PREDICTION OF CRIMINAL BEHAVIOR AND RECIDIVISM

EXPERIMENTAL MANPOWER LABORATORY FOR CORRECTIONS

REHABILITATION RESEARCH FOUNDATION

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Preface

This report focuses on the further validation of the Environmental Deprivation Scale (EDS), a measure of environmental input and support for adaptive behavior. It is one of a series of eight reports stemming from the 1971 Follow-up Study. The other seven deal with the following topics:

- The overall methodology and outcomes of the 1971 Follow-up Study.
- The development of the Law Encounter Severity Scale (LESS), the criterion for law-violating and criminal behavior and recidivism.
- The validation of the Maladaptive Behavior Record (MBR), a measure of behaviors leading to law encounters and violations.
- The development and validation of the Weekly Activity Record (WAR), a measure of time allocation of behavior.
- The psychometric details of data analysis from these predictive instruments, including validity, reliability, intercorrelations, etc.
- The development of a behavioral interview guide.
- A number of *hypothesis-generating studies* that developed from the comprehensive follow-up data and that suggest new research dimensions.

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Abstract

This report deals with the further validation of the Environmental Deprivation Scale (EDS) as a predictor of criminal behavior and recidivism. The EDS measures the degree of supportive environmental input through 16 items covering occupation, organizational activities, and interpersonal relationships.

The data were obtained in behavioral interviews with 128 prison releasees who were subjects in a longitudinal follow-up study conducted by the Experimental Manpower Laboratory for Corrections (EMLC). The validating criterion used was the Law Encounter Severity Scale (LESS), a five-part continuum of criminal behavior with 38 points that range from no law encounters to return to prison for a life sentence.

Whole scale scores, item clusters, and individual items were found to be highly valid predictors of criminal activities that result in continued criminal behavior and its consequences, i.e., return to prison for felony conviction or in misdemeanor conviction. The item cluster dealing with interpersonal factors was found to be the most statistically significant and predictive of the LESS criterion, while organizational and work-related clusters also showed high predictive accuracy. Individual items followed the pattern set by the clusters. Interpersonal items were the most significant, followed by organizational and occupational items.

The two other behavioral assessment instruments used in the follow-up study, the Maladaptive Behavior Record (MBR) and Weekly Activity Record (WAR), are the response counterparts of the EDS, i.e., they measure an individual's behavior in response to his environment. These instruments correlate moderately with the EDS. The three instruments used together constitute a battery of objective measures for detection, diagnosis, and evaluation in the study of criminal behavior, providing a basis for the development of more effective treatment and retraining programs.

Developmental Setting of the Behavioral Assessment Instruments

The research reported here is part of the 1971 Follow-up Study, a longitudinal study of the postrelease behavior of the released offender and the effects of institutional treatment on this behavior. This study, conducted by the Experimental Manpower Laboratory for Corrections (EMLC), replicates, in part, a previous investigation begun in 1969 and referred to as the 1969 Follow-up Study (Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973). The major objectives of these studies were: (1) to develop and validate methods of measuring environmental factors and day-to-day behaviors of released offenders in order to predict recidivism, (2) to evaluate the postrelease effect of institutional treatment programs, and (3) to provide the information necessary to develop effective community and institutional treatment programs.

During the course of the 1969 Follow-up Study, two behavioral assessment instruments were validated against a three-part criterion of criminal behavior: none, minor, and major law violations. One instrument, the Maladaptive Behavior Record (MBR), deals with demonstrated maladaptive behaviors that precede and predict negative encounters with the criminal justice system. The MBR has proven highly sensitive to detection of such behavior and has shown extreme accuracy in predicting law encounters and eventual arrest and conviction (Jenkins, Barton, DeVine, deValera, Muller, Witherspoon, & McKee, 1974).

The other instrument validated in the 1969 Study is the Environmental Deprivation Scale (EDS), which is concerned with the environmental correlates and predictors of the overt behaviors measured by the MBR. The EDS was derived from intensive behavioral studies conducted by Pascal and Jenkins (1961) and was originally designed to predict ulcer intractability. It has since been validated against and proven highly predictive of a variety of deviant behaviors, including skid row alcoholism, "mental illness," and drug abuse. In the 1969 Follow-up Study the EDS proved highly valid and predicted law encounters with 85% accuracy.

A third instrument, the Weekly Activity Record (WAR), was developed late in the 1969 Study to record the relative amount of time devoted each week to 19 major activities, measuring the duration of behavior. A preliminary form of the WAR was administered to a number of subjects (*S*s) late in the 1969 Study; it was then revised and used with the EDS and MBR in the 1971 Study (Jenkins, Muller, DeVine, deValera, Witherspoon, & McKee, 1974; Jenkins, Witherspoon, DeVine, deValera, Muller, Barton, & McKee, 1974).

The 1971 Follow-up Study expanded the research design of the 1969 Study to evaluate additional types of institutional treatment, further validate the follow-up instruments, and provide additional information for treatment. The three-part criterion of criminal behavior was replaced by the Law Encounter Severity Scale (LESS), the continuum of crime severity against which the EDS, MBR, and WAR were validated.

This report presents the findings of the 1971 Follow-up Study as they relate to the EDS, demonstrating the validity of the instrument, whole and in part, as a predictor of law encounters and recidivism.

Description of the EDS

The EDS is a 16-item interview guide dealing with the presence or absence of supportive environmental input from three major areas: work, interpersonal relationships, and organizations. Each item is scored "0", indicating positive supportive input, or "1", indicating an absence of supportive input or the presence of negative input or support. A total score of 0 for all 16 items indicates complete supportive input in all areas, while a score of 16 indicates a complete absence of supportive input. Because such extreme scores are rarely encountered in practice, however, the operational range of the EDS is 2-15.

The individual items of the EDS are listed below with an indication of what is considered in scoring each item.

1. *Employment*. The *S*'s work history over a specified time period determines the score for this item–how many hours or days/week does he work?

2. *Income*. This item assesses whether *S*'s personal income (i.e., exclusive of his wife's earnings, gifts from his parents, or pensions) is sufficient to provide the necessities of life.

3. *Debts*. The *S*'s debts are assessed in terms of whether he can make the payments without undue strain on his income.

4. *Job Participation*. Job involvement forms the basis for scoring this item. Does *S* show any interest in his job other than as a means of providing subsistence?

5. *Job Status*. This item involves the amount of pride *S* takes in his job, the degree to which he considers himself to be important to the company, and the perceived status of his job in relation to that of his co-workers.

6. *Hobbies and Avocations.* Environmental support from hobbies and non-occupational leisure activities (e.g., stamp collecting, fishing, or skin diving) is measured for scoring this item. Does *S* verbalize pride in his participation?

7. *Education.* The primary consideration here is whether *S*'s educational level meets the requirements of his job and provides realistic opportunities for advancement. A certain cutoff point is usually determined for the particular study population. For ex-offenders, the cutoff point was completion of the 10th grade.

8. *Residence.* In scoring this item, it is important to determine if *S* actively engages in the maintenance and improvement of his room, apartment, trailer, or house. Is *S* satisfied with and proud of his home and his neighborhood?

9. *Church.* This item assesses *S*'s church attendance and participation in church-related activities.

10. *Other Organizations.* The *S*'s active involvement in clubs, sporting groups, or other organizations forms the basis for scoring this item.

11. *Friends.* Here the extent of *S*'s relationships with people outside his family is determined. Do his friends show concern for him? Do they support socially acceptable behavior?

12. *Relatives.* This item deals with the behavioral support *S* receives from relatives outside his immediate family–brothers, sisters, in-laws, and aunts and uncles. Supportive behaviors include visiting, telephoning, and acknowledging special occasions.

13. *Parents.* Positive interactions with parents or parental surrogates (e.g., foster parents) are assessed. Key behaviors by parents are affectionate greetings, visiting, and telephoning or writing when distance prohibits visits.

14. *Wife.* This item concerns the relationship between *S* and his wife (or steady girl friend). Does his wife's behavior indicate concern and affection for *S*? Does she support his adaptive behavior?

15. *Children.* The *S*'s activities with his children are assessed in this item. The children's input to him is also important.

16. *Fear.* Scoring of this item is based on *S*'s verbalized fears of failure to meet his responsibilities or inability to meet daily demands.

The interviewer records the specifics for each item that formed the basis for scoring as well as the numerical score.

Methodology in the Application and Validation of the EDS

Subjects in the 1971 Follow-up Study were 142 offenders paroled or released from Draper Correctional Center between October, 1970, and January, 1973. Their ages ranged from 17 to 55, with a mean of 25 and a standard deviation of 6.6. The sample was equally composed of blacks and whites and was thus representative of the racial composition of Draper. Due to pre-contact arrests and movement out of the study area, the working *N* was reduced to 128 *S*s for whom EDS scores were available.

The *S*s were behaviorally interviewed prior to release and at postrelease intervals of 3-6 and 12-15 months. The interviews were structured by the instruments used: the Interview Guide, the EDS, the MBR, and the WAR. Information was sought pertaining to specific behaviors and environmental events in the areas of societal adjustment (which included law encounters), social and interpersonal behavior, occupation and employment, money matters and financial status, housing, and public acceptance. Each *S*'s law encounters were recorded with the date they occurred and verified when necessary. The average length of time an *S* was followed up was 18 months.

The validation process consisted of comparing the 16 individual EDS items, natural cluster scores, and whole scale scores with the five empirically derived law encounter groups that form the Law Encounter Severity Scale (LESS) (Witherspoon, deValera, & Jenkins, 1973). The LESS is a continuum of crime severity, consisting of 38 points that range from no law encounters to a felony conviction with a sentence of 20 years or more (including a life sentence or the death penalty). The five LESS groups were formed by combining law encounters of comparable severity into clusters. These may be summarized as follows:

Group I: No law encounters.

Group II: Picked up and/or questioned or searched concerning misdemeanor(s) or felony(s), with all charges eventually being dropped.

Group III: Awaiting trial for misdemeanor(s) or was tried in court for misdemeanor(s) or felony(s) but was not convicted; picked up for parole violation but parole reinstated (or waiting hearing); wanted for misdemeanor(s); killed in commission of a misdemeanor; or convicted of misdemeanor or sentenced or fined.

Group IV: Wanted for felony(s); absconded from parole; awaiting trial for felony(s); parole violated and returned to prison; killed during the commission of felony(s); or convicted for felony(s) and placed on probation or sentenced to less than one year in prison.

Group V: Convicted for felony(s) and sentenced to prison for more than one year.

Data were examined in two ways, one of which looked at all *S*s (one score per *S*). The other method used all available scores: since some of the 128 *S*s had multiple law encounters, an EDS score was recorded for each incident. These scores reflect *S*'s environmental support immediately prior to the law encounter. One score per *S* was recorded for *S*s who had no law encounters, yielding a total of 166 available scores.

Data concerning the outcomes of the validation procedure for the EDS are contained in the following section.

Results

Total Score Validation

Table 1 presents distribution data and descriptive statistics using the LESS as a criterion for all *S*s, and Table 2 presents the same data for all available scores. Grand EDS medians for the two groups were 9.7 for all *S*s and 10.1 for all available scores.

Both Tables 1 and 2 show an orderly progression in EDS score as severity of law encounter increases. In addition to consistency of outcome, the magnitude of differences is large, amounting to around 50% in the medians of the extreme groups (LESS Group I versus Group V). Overall ANOVA is highly significant for the data of both tables. Multiple comparisons of subgroups suggest the feasibility of dividing the LESS into three, four, or five criterial groups.

LESS groups were split on a high-low basis around the combined EDS median and mean (grand average). The percentages of each LESS group scoring above and below the grand average are given for all *S*s in the upper portion of Table 3 and for all available scores in the lower part of Table 3.

Again, a quite large and consistent trend is clearly apparent. In both sets of data high scores on the EDS covary with severe criminal behavior, and low scores are associated with absence of or minimal law encounters.

Using the high-low split around the grand average, the groups without major charges, LESS Groups I and II, were compared with the convicted groups, LESS Groups III, IV, and V. A Q-coefficient of .50 was generated for all *S*s and .63 for all available scores,

TABLE 1

Distribution of Total EDS Scores by LESS Group for 128 Subjects in the 1971 Follow-up Study

EDS Total Score	LESS Group					
	I *N* = 40	II *N* = 22	III *N* = 17	IV *N* = 21	V *N* = 28	Total *N* = 128
14-15	0	0	0	2	3	5
12-13	2	3	1	4	5	15
10-11	9	6	6	7	11	39
8-9	9	2	6	1	8	26
6-7	12	6	3	6	1	28
4-5	8	5	1	1	0	15
Mean	7.7	8.1	8.9	9.7	10.7	8.9
Median	7.5	8.0	9.5	10.7	11.0	9.7
Range	4-12	4-13	5-12	4-15	7-15	4-15

TABLE 2

Distribution of All Available EDS Scores by LESS Group for 128 Subjects in the 1971 Follow-up Study (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of *S*s.)

EDS Total Score	LESS Group					
	I *N* = 40	II *N* = 47	III *N* = 30	IV *N* = 21	V *N* = 28	Total *N* = 166
14-15	0	5	3	4	8	20
12-13	2	7	7	4	14	34
10-11	9	7	7	5	3	31
8-9	9	9	9	3	2	32
6-7	12	11	3	4	1	31
4-5	8	8	1	1	0	18
Mean	7.7	8.7	10.4	10.4	12.4	9.6
Median	8.0	8.7	11.0	11.3	12.9	10.1
Range	4-12	4-14	5-15	4-15	7-16	4-16

TABLE 3

Percent of 1971 Follow-up Study Subjects Scoring Above and Below the EDS Grand Average by LESS Group for All Subjects and All Available Scores (For *all available scores*, the *N*s in Groups II-V represent the total number of law encounters.)

Position Relative to Grand Average	LESS Group					
	I	II	III	IV	V	Total
All *S*s						
N	40	22	17	21	28	128
High	28%	41%	41%	62%	68%	46%
Low	72%	59%	59%	38%	32%	54%
All Available Scores						
N	40	47	30	21	28	166
High	28%	40%	57%	62%	89%	51%
Low	72%	60%	43%	38%	11%	49%

both highly significant. Accuracy of prediction was 63% for total *S*s and 68% for total law encounters.

Using the same grand average values as a breaking point, the behaviorally extreme groups, LESS Groups I and V, were compared statistically. Two highly significant Q-coefficients were generated: .70 for all *S*s and .91 for all available scores. Predictive accuracy for the extreme groups is 71% for all *S*s and 91% for all available scores.

Predictive instruments are typically more accurate in the extremes of the distribution. To examine this aspect of the EDS, total scores in the high and low thirds of the distribution were isolated for separate validation. The percentages of cases in these thirds are presented in Table 4, shown separately by all *S*s and by all available scores.

In this table, a striking trend is apparent for a small percentage of the cases in LESS Groups I and II to fall in the top third of the distribution, as compared with a majority of cases in the more severe groups, LESS Groups IV and V. The trends, while more significant than those apparent in the high-low halves of Table 3, are quite consistent across both breakdowns.

Again, the two lowest LESS groups were compared to the highest three, based on the relative representation of the high and low scores in the combined groups (LESS Groups I and II versus Groups III, IV, and V). Q-coefficients for these data were .75

TABLE 4

Percent of 1971 Follow-up Study Subjects in the High and Low Thirds of the EDS Distribution by LESS Group for All Subjects and All Available Scores (For *all available scores*, the *N*s in Groups II-V represent the total number of law encounters.)

Distribution Thirds	LESS Group					
	I	II	III	IV	V	Total
All *S*s						
N	40	22	16	20	30	128
High	10% (4)	32% (7)	24% (4)	50% (10)	50% (15)	31% (40)
Low	50% (20)	50% (11)	24% (4)	33% (7)	4% (1)	33% (43)
All Available Scores						
N	40	47	30	21	28	166
High	5% (2)	26% (12)	33% (10)	38% (9)	79% (22)	33% (55)
Low	50% (20)	40% (19)	13% (4)	24% (5)	4% (2)	30% (50)

for all *S*s and .84 for all available scores. Predictive accuracy based on these scores was 72% for all *S*s and 84% for all available scores.

The same high and low thirds split was used with the extreme LESS groups, I and V, and the comparisons produced Qs of .97 and .99. The accuracy of prediction was 87% for all *S*s and 93% for all available scores.

To summarize the rather large amount of data analysis contained in the preceding paragraphs, Tables 5 and 6 were constructed, the former for all *S*s and the latter for all available scores. They contain the two-by-two tables from which the Q-coefficients were calculated, along with analytical information.

Overall, the discriminating power of EDS scores for law encounters is quite high. As expected, predictive accuracy increases as the scores for the more extreme groups are employed in the analysis. It is noteworthy that the data for all available scores consistently yield somewhat higher predictive accuracies than do the outcomes based on all *S*s.

TABLE 5

High-Low Halves and Thirds for All Subjects by Overall and Extreme LESS Groups

Splits	Overall LESS Groups		Extreme LESS Groups	
	I-II	III-V	I	V
High-Low Halves				
High ≥ 10	20	39	11	19
Low ≤ 9	42	27	29	9
N	128		68	
Q	.50		.70	
Predictive Accuracy	63%		71%	
High-Low Thirds				
High ≥ 11	11	28	4	14
Low ≤ 7	31	12	20	1
N	82		39	
Q	.78		.97	
Predictive Accuracy	72%		87%	

TABLE 6

High-Low Halves and Thirds for All Available Scores by Overall and Extreme LESS Groups

Splits	Overall LESS Groups		Extreme LESS Groups	
	I-II	III-V	I	V
High-Low Halves				
High ≥ 10	30	55	11	25
Low ≤ 9	57	24	29	3
N	166		68	
Q	.63		.91	
Predictive Accuracy	68%		79%	
High-Low Thirds				
High ≥ 11	14	40	2	22
Low ≤ 7	39	10	20	1
N	103		45	
Q	.84		.99	
Predictive Accuracy	84%		93%	

EDS Cluster Validation

The individual items of the EDS were divided into three clusters: occupation (Items 1-5), organizational activities (Items 6-10), and interpersonal relationships (Items 11-16). Table 7 presents descriptive data for the five LESS groups for all *S*s and Table 8 presents the same data for all available scores.

The orderly increase in cluster scores with LESS groups is quite apparent in these tables. The increases in cluster averages are also large, ranging between 20% and 80% from LESS Group I to Group V. Overall analysis of the data in Tables 7 and 8 yields extremely high significance.

The cluster data for all available scores were also split around the grand median. Q values from the comparison of Groups I and II with III, IV, and V combined were .42 for the occupational cluster, .52 for the organizational cluster, and .59 for the interpersonal cluster. The predictive accuracies were 55%, 61%, and 59%, respectively. The extreme groups (I and V), compared in a similar manner, produced Qs of .81, .79, and .90 for the clusters and predictive accuracies of 74%, 81%, and 80%. All outcomes are highly significant.

The grand median of each cluster was used as a cutting point, and the scores in each of the LESS groups were then sorted around that median. Using the data for all *S*s, the comparison of LESS Groups I and II with Groups III, IV, and V produced a Q of .52 for the occupational cluster, .63 for the organizational cluster, and .65 for the interpersonal cluster. Percent accuracies of prediction were 64%, 66%, and 68%, respectively. Using the median split with the extreme groups, LESS Groups I and V, the corresponding Qs were .83, .82, and .81. The predictive accuracies were 75%, 68%, and 76%. All outcomes are highly significant.

These cluster analyses clearly indicate basic deficiencies in the occupational, organizational, and interpersonal areas, increasing as severity of law encounter increases. Overall, the more severe the law encounter is, the greater the deficit is in all three areas. The outcomes concerning individual items, presented in the next section, examine these environmental deficiencies in more detail.

TABLE 7

EDS Cluster Distribution by LESS Groups for 128 Subjects

Cluster	LESS Group					
	I $N = 40$	II $N = 22$	III $N = 16$	IV $N = 20$	V $N = 30$	Total $N = 128$
Occupational (Items 1-5)						
Mean	2.1	2.4	2.3	2.6	3.7	2.6
Median	2.5	2.9	2.7	3.5	4.6	2.9
Range	0-5	0-5	0-5	0-5	0-5	0-5
Organizational (Items 6-10)						
Mean	3.4	3.5	3.8	3.9	4.3	3.7
Median	3.9	3.9	4.5	4.5	4.7	4.4
Range	1-5	1-5	2-5	2-5	2-5	1-5
Interpersonal (Items 11-16)						
Mean	2.3	2.3	3.4	4.0	4.3	3.2
Median	2.8	2.6	3.9	4.6	5.2	3.8
Range	0-6	0-5	1-5	1-6	1-6	0-6

TABLE 8

EDS Cluster Distribution Based on All Available Scores by LESS Groups for 128 Subjects (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of Ss.)

Cluster	LESS Group					
	I $N = 40$	II $N = 47$	III $N = 30$	IV $N = 21$	V $N = 28$	Total $N = 166$
Occupational (Items 1-5)						
Mean	2.1	2.3	2.8	2.4	3.8	3.2
Median	2.5	2.7	3.0	3.2	4.8	3.0
Range	0-5	0-5	0-5	0-5	0-5	0-5
Organizational (Items 6-10)						
Mean	3.4	3.6	3.9	4.0	4.2	3.8
Median	3.9	4.3	4.4	4.5	4.9	4.4
Range	0-5	1-5	2-5	2-5	2-5	0-5
Interpersonal (Items 11-16)						
Mean	2.3	3.1	3.8	3.9	4.7	3.4
Median	2.8	4.0	4.5	4.5	5.4	4.3
Range	0-6	0-6	1-6	1-6	2-6	0-6

EDS Item Validation

Item score distributions are presented in Table 9 for the five LESS groups in terms of the percent of "0" scores (indicating presence of environmental support) on each of the 16 EDS items, based on all available scores. The table also gives Q-coefficients for each of the items, both for the overall comparison and for the extreme LESS groups. The percent of "0" scores may be taken as accuracy of prediction for the first two LESS groups, while the reciprocal provides the accuracy of prediction in LESS Groups III, IV, and V.

TABLE 9

Percent '0' Scores on EDS Items by LESS Groups for 128 Subjects in the 1971 Follow-up Study (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of *S*s.)

EDS Item	LESS Group						Q-Coefficient	
	LESS I *N* = 40	LESS II *N* = 47	LESS III *N* = 30	LESS IV *N* = 21	LESS V *N* = 28	Total *N* = 166	LESS I-II vs III-V	LESS I vs V
1. Employment	78	63	57	57	29	60	.42	.79
2. Income	70	55	47	48	25	49	.41	.75
3. Debts	88	84	77	86	50	79	.43	.60
4. Job Participation	33	45	33	38	13	34	.25	.53
5. Job Status	28	33	23	24	8	25	.32	.63
6. Hobbies and Avocations	15	25	13	5	0	14	.57	.89
7. Education	63	63	63	62	54	61	.06	.27
8. Residence	50	29	23	33	17	35	.43	.66
9. Church	25	20	7	0	8	25	.67	.59
10. Other Organizations	8	0	0	0	0	2	.44	.79
11. Friends	70	45	23	14	8	38	.74	.93
12. Relatives	70	61	63	48	33	58	.31	.65
13. Parents	73	63	47	33	46	56	.46	.52
14. Wife	43	53	40	48	29	44	.20	.30
15. Children	30	24	17	24	17	22	.22	.34
16. Fear	83	61	40	33	8	51	.72	.96

All Q-coefficients are significant beyond the .05 level of confidence, with the exception of the .06 Q for Education (Item 7). The most significant items overall are Friends (Item 11) and Fear (Item 16), for which the Q values are .74 and .72. The least significant items were Wife (Item 14) and Children (Item 15), with Qs of .20 and .22. In the comparison of LESS Groups I and V, all items are highly significant, the most discriminating ones being Items 1, 2, 6, 11, and 16.

A careful examination of Table 9 suggests particular areas for intervention and retraining. In the occupational area, for instance, *Ss* in the more severe LESS groups have difficulty procuring jobs and maintaining themselves on them. Income and money management, reflected in the EDS Items 2 and 3, are also related to the occupational area. Further, training is needed in the areas covered by Job Participation (Item 4) and Job Status (Item 5), the pride taken in doing the job. Such detailed analysis points the way to the development of treatment and training programs that focus on these specific areas of deficit.

Another case in point is the interpersonal area (Items 11-16). Subjects with high scores for these items tend to associate with maladaptive companions that trigger and support maladaptive behaviors. The last item, Fear, focuses on self-confidence and ability to cope with everyday problems. This ability pertains, in large part, to the development of social and interpersonal skills as well as occupational expertise. It should be added that organizational activities (Items 6-10) are mostly interpersonal in nature.

EDS Total Scores by Institutional Treatment

The 1971 Follow-up Study *Ss* underwent different types of institutional treatment, consisting of Manpower Development and Training (MDT) vocational training, Token Economy participation, and State Trade School vocational training. A control group received no institutional treatment. The EDS outcomes by type of institutional treatment are contained in Table 10. Because of small *Ns* in several instances, LESS Groups I and II were compared to Groups III, IV, and V.

The major finding shown in this table is the large and consistent differences across criterial groups, consistent with Tables 1 and 2. Differences across treatment groups are small and relatively inconsistent, with appreciable variability. Overall analysis yields significance only for the law encounter continuum.

TABLE 10

EDS Scores by Institutional Treatment Group and LESS Groups

Institutional Treatment Group	LESS Group		
	I-II	III-V	Total
MDT			
N	22	32	54
Median	9.5	10.5	10.0
Range	5-13	4-15	4-15
Token Economy			
N	12	10	22
Median	6.5	11.5	8.5
Range	3-12	3-14	3-14
State Trade School			
N	10	9	19
Median	8.1	8.6	8.3
Range	4-13	5-11	4-13
Control			
N	18	15	33
Median	8	9.2	8.7
Range	4-12	6-15	4-15
Total			
N	62	66	128
Median	7.8	10.4	9.1
Range	3-13	3-15	3-15

Of note in this context are the "crime rates" for the several treatment groups. All convictions for misdemeanors and felonies were recorded over the 18-month follow-up period. The percentage of convictions for each group after 18 months was: MDT, 60%; Token Economy, 41%; State Trade School, 47%; Control, 45%; and overall, 52%. Statistically, these figures could well have been drawn from a common population.

Changes in EDS Scores over Time

The stability or systematic change in any behavioral measure over time is of consequence. Two separate analyses were conducted with the EDS in this regard. In the first a sample of 34 *S*s was seen monthly, when available, as part of a special, intensive study. All scores were Vincentized into four equal sets and averaged across *S*s. Data were separated for 15 *S*s in LESS Groups I-II, 6 in Group III, and 13 in Groups IV-V. The

total time span was approximately 1.5 years, with each point representing .38 years, or 4.5 months. The average scores over time were as follows:

LESS Group	Time Period 1	2	3	4	Overall
I-II (N = 15)	6.7	7.4	7.2	7.2	7.2
III (N = 6)	8.9	9.0	8.5	8.5	8.7
IV-V (N = 13)	9.8	11.0	12.2	12.2	11.3

The results for the first two groups exhibit relative stability over time. The more severe law encounter group (LESS Groups IV-V), on the other hand, shows a significant increase in total EDS score over the same period. Although the *N*s are relatively small, the outcomes are quite consistent with previous findings (Jenkins et al., 1973).

The second analysis consisted of comparing EDS scores at the 3-6 month postrelease interval with those at the 12-15 month interval. The same LESS groupings were employed as in the previous set of data. The outcomes were as follows:

LESS Group	Score at 3-6 Months	Score at 12-15 Months
I-II (N = 62)	7.9	7.8
III (N = 17)	9.0	9.2
IV-V (N = 49)	11.2	11.0

These changes are not significant. About one-third of the scores decreased, one-third increased, and one-third remained the same.

Overall, the results of these analyses suggest considerable stability of EDS scores for the less severe law encounter groups and much higher or increasing scores for the more severe LESS groups.

EDS Reliability

A number of previous studies have indicated quite high reliability for the EDS, whether consistency of measurement is recorded internally (split-half method) or externally by test-retest or judge agreement (rater-rater). These outcomes are confirmed in the present investigation. Employing the group of 34 *S*s interviewed monthly, scores for interviews conducted in the odd-numbered months were correlated with those for the even ones. A coefficient of .98 emerged. The scores for the 34 *S*s at the 3-6 month interval were

also correlated with those at 12-15 months, resulting in a reliability correlation of .95.

Several studies were conducted of judge agreement. In one, 15 independent judges agreed almost perfectly on the scoring of a video-taped interview. Other investigations of rater-rater agreement yielded coefficients falling between .80 and .92. Such investigations have demonstrated that the reliability of the EDS is very high.

Relationship of the EDS to the MBR and WAR

The EDS assesses environmental input and post-response reinforcement, while the MBR and WAR measure the response side of the stimulus-response paradigm. The correlation of the EDS with the MBR in a sample of 116 was .73; with the WAR, the correlation was .54. While these coefficients fall in the moderate range, they are not great enough in magnitude to warrant combining or changing the instruments. After all, a correlation of .70 leaves over 50% of the variance unaccounted for. It was therefore decided to leave the instruments intact at this time or until further research calls for revision.

The details of intercorrelation of items and instruments, reliability, and related topics will be examined in a forthcoming report.

The In-Prison Application of the EDS

The EDS has also been used to estimate adjustment to the prison setting. Behavioral interviewing provided environmental support data at five time periods: (1) pre-prison and prior to crime commission (retroactive); (2) in-prison in terms of institutional work assignments, organizational activities, and interpersonal relationships; (3) postrelease projection in terms of *S*'s expectations of his environment after release; (4) 3-6 months postrelease; and (5) 12-15 months postrelease. (The latter two scores were obtained in the course of the 1971 Follow-up Study.)

The 137 *S*s interviewed in prison (providing scores for the first three time periods) were followed up after release if they remained in the area covered in the 1971 Follow-up Study. The *N*s for the two postrelease time periods, included in Table 11, therefore vary as *S*s moved out of the study area. The classification of *S*s into the three law violation groups reflects their status at 12-15 months postrelease. For 123 *S*s, this status was determined by their EDS scores at that time. Law encounter data for the remaining 14 *S*s were obtained from official sources, as these *S*s were not available for an interview.

The descriptive statistics are contained in Table 11, in which mean EDS scores for each of the five time periods are given for the three criterial groups.

TABLE 11

Mean EDS Scores at Five Time Periods for Subjects in the 1971 Follow-up Study (The *N*s are given in parentheses.)

Time Periods	Law Violation				
	None (LESS Groups I-II)	Minor (LESS Group III)	Major (LESS Groups IV-V)	Total *N*	Q-Coefficient
Pre-prison	8.2 (78)	9.1 (33)	9.6 (26)	137	.23
In-prison	6.2 (78)	6.9 (33)	5.5 (26)	137	-.28
Postrelease projection	6.8 (78)	6.8 (33)	6.4 (26)	137	-.20
3-6 months postrelease	7.9 (70)	9.3 (33)	11.6 (23)	126	.40
12-15 months postrelease	8.8 (71)	9.6 (31)	11.0 (21)	123	.60

In all three criterial groups a clear-cut parabola emerges, with higher EDS scores for the pre-prison and postrelease points and lower scores for the in-prison and projected postrelease periods. The flattest curve occurs for the non-law violator group, and the most bowed, for the major law violators. The number of *S*s showing the group trends increased from about 70% in the non-law violator group to about 95% in the major law violator group.

These data suggest that prison inmates may adjust better to prison than to the "free world" and project their postrelease environment as far more supportive than it actually turns out to be. The trends are differential, with the major law violation group showing the lowest in-prison EDS scores and the highest free-world scores. This finding suggests a negative relationship between prison and free-world adjustment, an inference that is supported by the validity coefficients presented in the last column of the table. Both in-prison and projected postrelease EDS scores correlate negatively with ultimate law violation status. (All correlations given are significant at the 1% level or beyond.)

Discussion

The EDS has been shown to be highly predictive of law encounters in terms of total score, clusters of items, and individual items. Some matters of longitudinal follow-up are presented in the following paragraphs.

Score Homogeneity in LESS Groups and Statistical Validity

The three most clear-cut of the five LESS groups in terms of their defintion–Groups I, III, and V–are those with the least variability in score. In the distribution based on all *S*s (one score per *S*), Group II (pickups for questioning) has a range from 3 to 13, or 10 points. Group IV, which includes *S*s awaiting trial on a felony charge or who have absconded from probation or parole to avoid prosecution on criminal charges, has a range of 11 points. Groups I, III, and V, by comparison, have ranges of 8, 7, and 8 points. In the distribution based on all available scores, Groups II and IV have ranges of 13 and 11 points, while Groups I, III, and V have ranges of 8, 10, and 9 points, with the extreme groups being the most homogeneous.

It is important to note that, while incongruities sometimes exist between LESS status and EDS scores, LESS Groups II and IV are situational and/or transitional by virtue of their composition. *S*s in these two groups can and do move to a more severe LESS group. Some members of Group II move ultimately to Groups III, IV, or V, and *S*s in Group IV have a high probability of moving into Group V. Thus, the arbitrary cutoff date for a follow-up study poses a major problem. At any cutoff point, some *S*s with higher EDS scores will be located in the lower LESS groups, temporarily suppressing the statistical validity of the EDS. Data from the 1969 Follow-up Study indicate that longer follow-up periods (36 months as compared to 18 months in the 1971 Study) result in higher validity for the EDS, as well as for the other predictive instruments developed by the EMLC. If the 1971 Study had been extended to 36 months, the EDS could be expected to be even more predictively valid than at 12-15 months, particularly in the high end of the distribution.

Item and Cluster Significance

In examining the data, the clusters provide a more specific understanding of the problems in the day-to-day life of the released offender. Interpersonal support tends to be the most critical factor in adapting to free-world life, both in the overall and extreme comparisons. Data from the WAR and the MBR confirm this observation, indicating both an absence of supportive interpersonal input and an exaggerated negative input for *S*s in the higher LESS categories.

The organizational cluster is also highly predictive of law encounters and recidivism. Only a small number of *S*s participate in formal organizations, especially traditional civic organizations. Obviously, the Elks, Moose, and Civitan clubs are not likely organizations

for released offenders to join. Barring church participation, this leaves very few formal organizations for the released offender to choose from other than such groups as Alcoholics Anonymous and Synanon. There thus appears to be a strong need for formal organizations designed to train and aid the released offender in solving common problems in an adaptive manner. A few such organizations have been started in certain metropolitan areas.

The highly significant validities of the occupational cluster indicate the need for change in the traditional institutional treatment programs. Job procurement and money management training should be combined with selection and training in a vocational area that is highly reinforcing to the individual.

Item significances generally followed the pattern of the clusters. Interpersonal items tended to be the most significant, and organizational items were second, followed closely by work-related items. The items of highest and lowest significance are in the interpersonal cluster. Fear (Item 16) and Friends (Item 11) are the most significant of the items. The most consistent decrement across the LESS groups occurs on the Friends item. In Group I, 70% of the *S*s indicated that they were receiving support for this item, while only 8% of those in Group V reported supportive input. This is not to say that *S*s in the higher LESS groups have no friends. They do, but these friends are generally ex-felons, known criminal offenders, and individuals involved in the use and sale of illegal drugs. Conversely, there is a decided tendency for *S*s in the lower LESS groups to make and keep friends outside the criminal subculture and to have only passing contact, if any, with prison acquaintances.

Fear (Item 16) shows the greatest discriminative power of any of the EDS items. In LESS Group I, 83% of the *S*s indicated that they were receiving supportive input, while only 8% of the *S*s in Group V were receiving support, a difference of 75 percentage points. Verbalized fear was most frequently associated with anxiety over the possibility of return to prison, particularly when *S*s were actively involved in criminal activities. Work and money problems were also mentioned as a source of fear and inability to cope. Three items, Hobbies and Avocations, Church, and Other Organizations (Items 6, 9, and 10) showed small effects in terms of absolute number, but extremely powerful discriminative effects, again emphasizing the potential such areas have for effective intervention. The only non significant item, Education, is uniformly high across the five LESS groups due to the relatively even distribution of basic education in all groups.

Implications for Treatment and Evaluation

Overall, the EDS is highly effective, not only in predicting postrelease success and failure, but also in pinpointing problem areas in need of intervention and treatment. Treatment programs can be designed to focus on particular behavioral areas as outlined by specific items or clusters of the EDS. For instance, training in social and interpersonal skills should, if effective, be reflected in Items 11-16 on the EDS. At the same time, other areas (e.g., occupation) reflect in large part an interpersonal component. If treatment is effective, then, *S* should also become increasingly well adjusted in these areas. Other types of institutional training, on the other hand, may be reflected in only one EDS item. For example, painting lessons in the institution art class may be reflected in Hobbies and Avocations (Item 6).

Most fundamentally, measures such as the EDS serve as the initial and terminal links in the chain of behavior alteration. The diagnostic data provided by the EDS, together with those from the MBR and WAR, should be used in the development of treatment programs to increase the probability that the intervention will be effective. The battery of instruments can then be used to evaluate the programs longitudinally.

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